A Work Project, presented as part of the requirements of the Award of a Master's degree in Finance from the Nova School of Business and Economics

DETERMINANTS OF CAPITAL EXPENDITURES IN AMERICAN SPORTSWEAR COMPANIES

FILIPE MANUEL TIAGO PEDRO, NUMBER 25962

Work project carried out under the supervision of:

Filipa Castro

January 6, 2020

Abstract

Capital Expenditures plays an important role in a firm's value. In this paper, it was concluded that Cash and Cash Equivalents plays an especial role on the determination of CapEx, since generally firms need to have cash in order to invest.

Key Words

CapEx; sportswear; funds; investor

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209),

POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

Introduction

As a complement to the main report's scenario analysis, I decided to study deeper the account of Capital Expenditures (CapEx). The objective of this report is to rely on econometric tests to increase my understanding of the forces that influence CapEx.

Considering that the importance of some variables to determine CapEx might change across industries and regions, I decided to only take samples from American sportswear firms, since that is Under Armour's industry and main region.

Literature Review

The main inspiration of this paper is Ivo Welch and David Wessels' *The Cross-Sectional Determinants of Capital Expenditures: A Multinational Comparison*. In this paper, the authors studied which determinants would affect the normalized capital expenditures the most in each region, using as independent variables firm's lagged stock return, net income, dividend yield, inventories, cash and cash equivalents, income taxes and sales. The authors concluded that stock returns are perhaps the most important factor that affects Capex in all regions except Europe. In this last region, only income taxes had a significant effect on capital expenditures. This understates the idea that, from region to region, the importance of each determinant of capex changes.

In Steven Fazzari, R. Glenn Hubbard and Bruce C. Petersen's *Financing Constraints and Corporate Investment*, the authors regressed a sample of firms' investment having as variables the Toby's Q ratio and current and lagged cash flow (both cash flow and investment were normalized to capital), with the cash flows being the most important variables – therefore, highlighting the importance of a firm generating financial resources internally.

The regressions

For the regressions, I used Ordinary Least Squares with robust standard errors in order to avoid having problems with heteroskedasticity. For these regressions, I used as dependent variable normalized CapEx and as independent variables normalized net income, inventories, cash and cash equivalents (CCE) and income taxes. Unlike the authors consulted in the literature review, I have decided to normalize the dependent and independent variables to net revenues instead of total assets. The reason was that, when I consulted Under Armour 2018 Investor Day, the target for CapEx was defined as percentage of revenues. Therefore, I am going to assume that all firms define the budget for capital expenditures based on their amount of revenues. The objective of normalizing all variables is to control for the different sizes of firms.

For my sample, in order to avoid ambiguous results due to use of firms from different regions, I used only firms from the same region as Under Armour (North America), and used data between 2009 and 2018. The chosen firms for my sample were Under Armour, Nike, Lululemon, VF Corporation, Decker's and Skechers. Just like the authors in my Literature Review, I counted as a sample the values of the accounts of each firm in each year, reaching a sample size of 60.

I chose to only include sportswear firms in my sample because I want to study what variables affect the CapEx just in this specific industry. I believe that, by including in the sample firms from other sectors, it would be beneficial as the sample size would increase, however, the regressions performed would no longer be controlling for differences in industry characteristics.

Linear regression

Number of obs	= 60
F(4, 55)	= 6.46
Prob > F	= 0.0002
R-squared	= 0.3906
Root MSE	= .01694

Capex	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
StockReturns	-.0136836	.0038637	-3.54	0.001	-.0214267	-.0059404
NetIncome	-.0613364	.0724074	-0.85	0.401	-.2064441	.0837712
IncomeTaxes	.2158446	.2041228	1.06	0.295	-.1932267	.6249159
CCE	.0986378	.0394215	2.50	0.015	.0196354	.1776403
_cons	.0242886	.0071537	3.40	0.001	.0099523	.0386249

Regression 1

In Regression 1, we see that only two variables are statistically significant at 95% confidence level: Stock Returns and CCE. Stock Returns' coefficient is negative, which is counter intuitive. I believe the value of this coefficient arises from a problem of inversed causality – an increase in CapEx, maintaining all else constant (including Net Income), can decrease Stock Returns because investors are seeing an increase in expenditures without an increase in profit margin.

Analysing now CCE, we see that an increase of CCE by 1% of revenues is related with a 9.86% in CapEx as percentage of revenues, on average, ceteris paribus. This indicates that sportswear firms tend to use internal financing when investing in CapEx.

Linear regression

Number of obs	=	54	
F(4, 49)	=	9.21	
Prob > F	=	0.0000	
R-squared	=	0.4292	
Root MSE	=	.01687	

Capex	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
StockReturns	-.0036474	.0031206	-1.17	0.248	-.0099186	.0026238
NetIncome	.1020835	.0858845	1.19	0.240	-.0705078	.2746748
IncomeTaxes	-.0510809	.2216358	-0.23	0.819	-.4964748	.394313
CCE	.1197282	.0338698	3.53	0.001	.0516644	.1877921
_cons	.0132435	.0070656	1.87	0.067	-.0009553	.0274423

Regression 2 – 1 year lag

In Regression 2, I introduced a 1-year lag in all independent variables. In this regression, only CCE was statistically significant. However, it is important to notice that its coefficient increased. On average, an increase in CCE by 1% of revenues is related with an increase in CapEx by 11.97% of revenues in the next year, ceteris paribus. I believe there are two possible explanations for this result: firms tend to use internal funding to increase their CapEx, and so in the previous year they start increasing their CCE; firms decided to increase their CapEx when they are sitting in a pile of cash, looking more actively for investment opportunities when they have big amounts of cash in their hands.

Looking now for other independent variables, we see that an increase in Income Taxes is related with an increase in CapEx. A possible explanation is that, when firms have higher taxes to pay, they have incentives to increase CapEx in order to reduce the amount of taxes they have to pay in that year. On the other hand, on the next year CapEx is reduced, as the higher taxes paid in the previous year reduced the amount of resources the firm has to spend on the present year.

An increase in Net Income is related with an increase in the next year CapEx, which corroborates the theory that firms tend to use funds from the previous year to increase their CapEx.

Conclusion

The conclusion of these regressions was that Cash and Cash Equivalents plays an important role when defining the value of CapEx. We also noticed that this relation is stronger when introducing a 1-year lag. This means that, in order to improve the forecast of CapEx of sportswear firms for next year, an investor could look to current changes in CCE, as it gives an indication of future values of CapEx.

Another conclusion is that, in the sportswear sector, internal resources play an important role in the determination of CapEx. Therefore, an investor could analyse the internal resources of the firm to see if it has conditions to improve its CapEx, or if, on the other hand, it is more likely to decrease.